

BEST PRACTICES IN USER FACILITIES



WILLIAM J. MCLEAN, DIRECTOR

Combustion Research Facility • Sandia National Laboratories
Livermore, California

**WORKSHOP ON NATIONAL LABORATORIES & UNIVERSITIES:
BUILDING NEW WAYS TO WORK TOGETHER**

Berkeley, CA • July 10-11, 2003

COMBUSTION RESEARCH FACILITY

THE CRF IS A DOE OFFICE OF SCIENCE, OFFICE OF BASIC ENERGY SCIENCES USER FACILITY

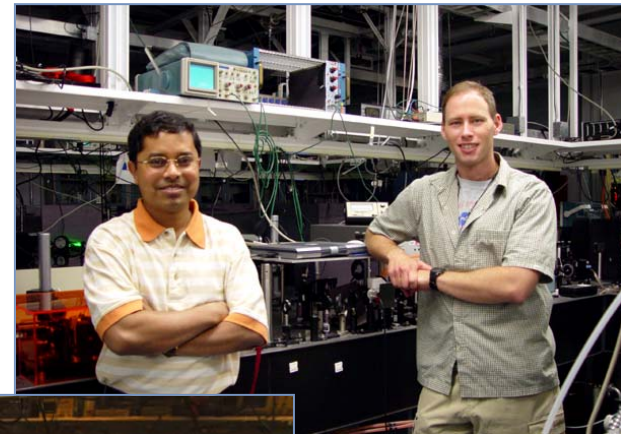
- Fundamental and Applied Sciences working together
- Vigorous “in-house” research and user interactions
- Nearly all users collaborate with CRF staff
- Approximately 100 University users annually



BEST PRACTICES IN USER FACILITIES

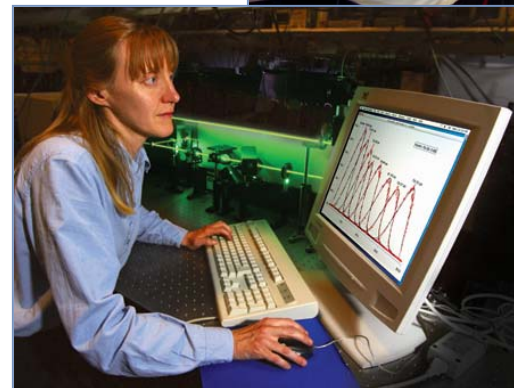
USERS:

- Visiting Scientists and engineers from Universities, Industry and other research laboratories
- Postdoctoral researchers
- Students (undergraduates and graduates)



ATTRACTIONS:

- Unique facilities and capabilities
- World-class staff
- High quality support
- A collaborative, collegial environment
- Cutting edge science
- Focus on maximum productivity while in residence
- Staff to handle arrangements from beginning to end



[illegible]

University Collaborations

Dr. David Chandler, Senior Scientist, Sandia

February 10-24, 2003,
May 27-June 16, 2003

The search for ultra-cold molecules

Unique capability, new approach

Stopped NO ($T < 1$ K) shows promise for first ever Bose-Einstein condensate of a molecule

CRF investing in new capability as a result of early results

BEST PRACTICES IN USER FACILITIES

EXAMPLE:

[illegible]

University Collaborations

Dr. Joe Oefelein,
Professors Chris Lawn,
Fred Gouldin and Dr. Robert Schefer



DATES: January 21 - June 30, 2003,

TOPIC: Novel diagnostics to examine turbulent flames

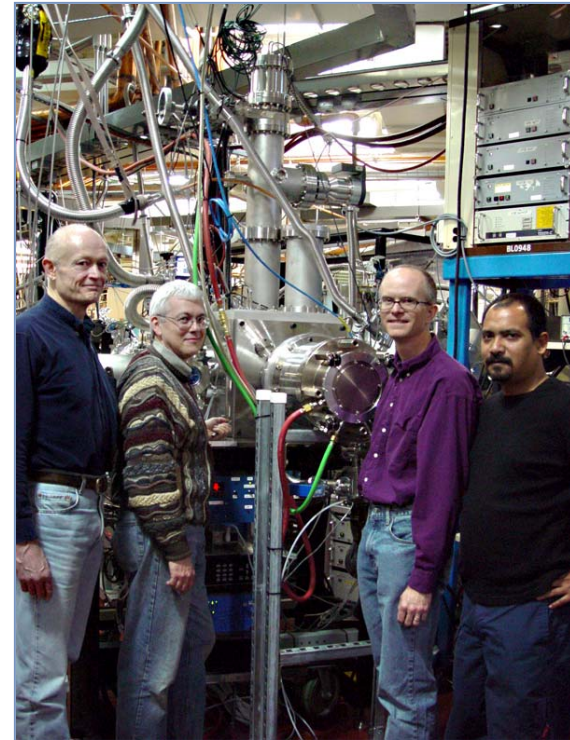
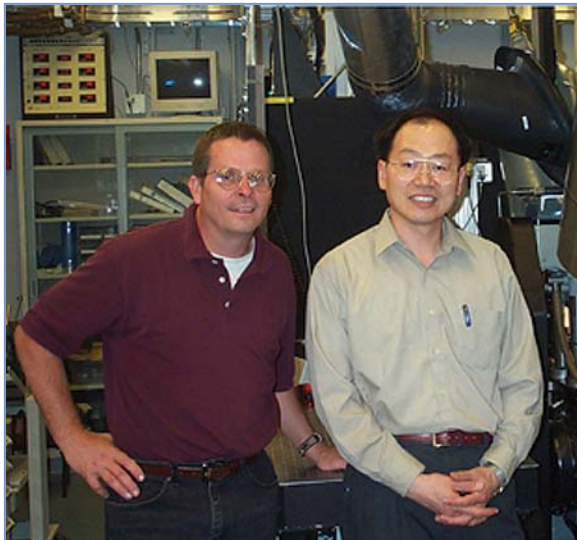
OPPORTUNITY: ☐☐☐ Combination of a new idea with experimental capability

RESULT: Demonstrated technique that permits spatial reconstruction of chemiluminescence in flames. Important for analysis of fluctuations in lean, pre-mixed flames.

FUTURE PLANS: Enhancement of model & improvement in S/N

BEST PRACTICES IN USER FACILITIES

Nine US engine companies, four national laboratories, and two universities working together to improve efficiency and reduce emissions



The Advanced Light Source at LBNL provides tunability to distinguish low molecular-weight isomers in a low-pressure flame.

BEST PRACTICES IN USER FACILITIES

BEST PRACTICES:

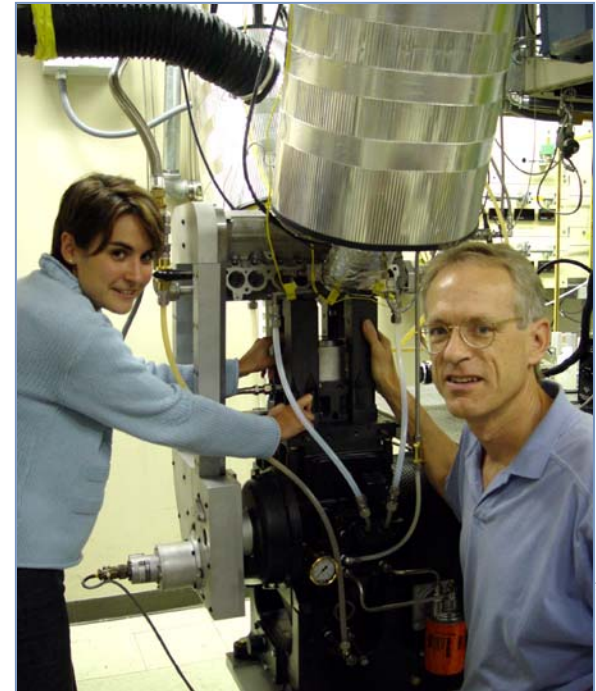
- Collaborative, flexible approaches
- Well planned, scheduled user projects
- Clear objectives and follow-on plans
- Engagement of students, postdocs
- Availability of capable and committed support staff
- Well staffed user office
- Support for foreign national user requirements
- Highly flexible arrangements
- Financial support for contributions to funded CRF research projects



BEST PRACTICES IN USER FACILITIES

ENHANCING COLLABORATIONS:

- Envision collaborations at proposal stage
- Graduate students in residence for some portion of thesis research
- Joint post doctoral appointments
- Laboratory staff as adjunct faculty
- Increased industry collaborations where appropriate
- Exploit advanced information technologies for true “collaboratories”



COLLABORATION FOR MULTI-SCALE CHEMICAL SCIENCE (CMCS)

- A collaboration of eight national labs and universities
- CMCS is piloting new informatics data sharing technology in the combustion community
- The first release of software was released in May for initial pilot groups



Sandia
National
Laboratories

Pacific Northwest
National Laboratory
Operated by Battelle for the
U.S. Department of Energy



Argonne
National
Laboratory



Los Alamos
NATIONAL LABORATORY



MIT

Massachusetts
Institute
of Technology

Berkeley
University of California



Sandia
National
Laboratories

